PART III

Physical Description

Physical Regions of Washington

On the basis of surface features, Washington may be divided into eight general regions. Agricultural settlement is influenced by factors of topography, climate, soil, forest vegetation and water resources distinctive to each of the physiographic regions. Each has become a different type of farming area as settlers have learned to adapt crops and livestock to the conditions, or have improved limitations through drainage or irrigation.

Coastal Plains

A narrow, sandy plain with shallow bays, tidal flats, stream deltas, and low headlands lies between the coastline and the Coast Range. It extends from the Columbia River mouth almost to Cape Flattery, being widest and lowest in the Grays Harbor and Willapa Bay districts. The climate is mild and damp with a long growing season, but it is too cool, cloudy and wet for most crops. Originally this area was covered with heavy forests and much is now covered with woodlands. Lumbering and manufacture of wood products is the main industry. Farming is largely of the livestock and dairying type on low uplands and drained areas in the lower Chehalis River Valley. Cranberry growing is important and well-adapted to numerous, boggy areas in the Grays Harbor and Willapa Bay sections. The shallow bays are also used for oyster culture. Fishing is common in the rivers and coastal banks.

Coast Range

The Coast Range is un uplifted area of sedimentary and metamorphic rocks divided into the Olympic Mountains and the Willapa Hills. The Olympics tower to nearly 8,000 feet in a dome-like structure, carved deeply by rivers. These mountains have the heaviest precipitation in the state. Snowfields and heavy forest cover the mountains. Most of the wilderness area is within the Olympic National Forest and Olympic National Park, being managed for recreation, wildlife and timber. Farm settlement is limited to some foothill river plains and coastal terraces such as the Dungeness and Port Angeles districts along the Strait of Juan De Fuca. Here in the lee of the mountains, rainfall is moderate and irrigation is practiced by some livestock farmers. The Willapa Hill country is wet, heavily forested and carved into numerous narrow valleys. Logging is the main industry, combined with livestock farming in the upper Chehalis River Valley and along the banks of the Columbia River. Wet climate, hilly topography and the difficulty of clearing stump land retards agriculture.

Willamette-Puget Sound Lowland

A broad lowland, described as a trough or valley, lies between the Coast Range and the Cascade Mountains. The northern part is the Puget Sound Lowland which has been glaciated and occupied by the sea in the lowest section. The continental glacier reached slightly south of Olympia. Under a warming climate it melted and geologists believe it receded about 25,000 years ago, leaving an infertile plain of moraines and outwash gravels, sands and clays known today

as the Puget Glacial Drift Plain. Its rolling surface has numerous lakes and bogs. Most of the major cities--Seattle, Tacoma, Everett, Bellingham and Olympia--have been built on moraines bordering the Sound. Rivers, such as the Nooksack, Skagit, Snoqualmie, White and Puyallup built up deltas and flood plains over the older gravelly plains. These narrow valleys are more fertile than the older glacial plains, and support numerous small dairy, vegetable and berry farms. Most of the gravelly areas are wooded with a second-growth forest and are used for pastures. In the southern part of the Willamette-Puget Sound Lowland, there are two large valleys--the Cowlitz and Chehalis. They drain a low, hilly area with several flat prairies and bottom lands.

Agriculture is handicapped by poor drainage and flooding of the river deltas and plains, by heavy winter rainfall, by cloudy but dry summers, by coarse, gravelly upland soils and by densely wooded land which is costly to clear. Advantages are mild climate and a location close to major markets for farm products such as milk, poultry and vegetables.

Cascade Mountains

The Cascades are a wide and high topographic and climatic barrier which separates western and eastern Washington. The range is made up of sedimentary, igneous and metamorphic rocks which have been carved by glaciers and streams. High isolated volcanic cones of lava such as Mt. Adams (12,307 feet), Mt. Rainier (14,408 feet) and Mt. Baker (10,791 feet) appear upon the older Cascade rocks. The Cascade crest varies between 10,000 and 3,000 feet and is higher and more rugged in northern Washington. Roads and railroads have been built across its lower passes in central and southern Washington. The Columbia River has cut a deep gorge and the lowest pass through the barrier. The western slope is wet and heavily forested with Douglas fir. The eastern slope is drier with a less-dense pine forest. Nearly all classified as forest land, most of the area is in Federal ownership in five national forests and Mount Rainier National Park. Tree fruit farming in the eastern slope valleys of Wenatchee, Chelan, Methow, Naches and the Columbia Gorge is most important. Sheep and cattle summer grazing on alpine grasslands is another use. Deep western slope valley bottoms such as the Skagit, Snoqualmie, Nisqually, Cowlitz and Lewis also contain livestock farms. The area is vitally important as a source of water for irrigation and city drinking water and as a source of timber. Steep terrain, wet climate, short growing seasons and heavy forest vegetation are main handicaps for agriculture.

Columbia Basin

A low plateau of old lava rocks covered with stream and wind-deposited soils extends in a series of plains, ridges, coulees and hills from the Cascades to the eastern Washington border. The area is basin-like in structure, being higher around its margins and sloping inward to low and level central plains. It has been shapply eroded by the Columbia River and its interior tributaries, the Snake, Yakima, Palouse and Spokane Rivers. The basin has sub-areas created by crustal movements and erosion.

The Yakima Folds are a series of hilly ridges extending from the Cascades eastward into the lower part of the basin. The Yakima and Columbia Rivers have cut gaps through the ridges and built up plains in the troughs between them. The rich, alluvial plain of the Yakima River is an important irrigated valley.

The Waterville Plateau is a tableland of thin soils overlaying basaltic rock at an elevation of 2,500 to 3,000 feet. It has gorges cut by the Columbia River and ancient glacial outwash streams once flowing in Moses and Grand Coulees. It is too high for irrigation and is used for dryland grain and livestock farming. The high plain is often called the Big Bend country.

The Channelled Scablands is a belt of dry terrain carved by ice-age rivers into a series of coulees. Bare rock is exposed in the coulees. Small plateaus between the old river channels have thin soils used for dryland farming. The Grand Coulee of this region has been developed into a major irrigation reservoir.

The Palouse Hills consist of fertile deposits of wind-blown soil overlaying basaltic lava flows. After being deposited in large dunes, the formation was reshaped by streams into an intricate pattern of low, rounded hills which are tilled for wheat, barley and legumes. The hills receive 16 to 25 inches of rainfall and have deep, porous and fertile soils. It is one of the richest farming areas of the Pacific Northwest.

The Central Plains are low and relatively level expanses of soil, deposited by old streams crossing the Channelled Scablands and later by the flooding of the Yakima, Columbia, Snake and Walla Walla Rivers. Climate is desert-like (6-12 inches of precipitation per year). The lower lands of the area, the Quincy and Pasco Basins and the Walla Walla Valley, are irrigated. Quincy Basin is a new irrigation area watered by Grand Coulee Dam.

Agricultural handicaps in Columbia Basin regions are mainly found in its dry, continental climate. Large irrigation systems built since 1900 have overcome much of the need for water on rich valley and basin soils. Dryland farming in higher areas is practiced widely, although occasional variations in rainfall, lack of snowfall, winter-kill, water and wind erosion inflict damage to field crops and to livestock ranges.

Okanogan Highlands

A portion of the Rocky Mountains, consisting of well-eroded old granites, lavas and sedimentary rocks extends across north central Washington. These are the Okanogan Highlands, the state's richest mineral area. Summit levels reach 4,000 to 5,000 feet with peaks exceeding 7,000 feet. Prominent north-south valleys are occupied by irrigated tree fruit and livestock farms. These are the Okanogan, Sanpoil, Kettle and Colville Valleys. The Columbia River gorge through the Okanogan Highlands is occupied by the large man-made lake behind Grand Coulee Dam--Roosevelt Lake. High and wetter portions are forested with pine and larch, and are managed for timber and for livestock ranges by the United States Forest Service and the Bureau of Indian Affairs. Cold winter temperatures, short growing seasons, dry valley climates and distance from markets are farming handicaps.

Selkirk Mountains

The Selkirks, a range of the Rocky Mountain system, extend into the northeast corner of Washington. The rocks are old mineralized granites and metamorphics reaching elevations of over 7,000 feet. The Pend Oreille River Valley

at the base of the Selkirks is an agricultural area of narrow bottom lands settled by livestock farmers. Nearly all of the uplands are in Kaniksu National Forest. While climate is cool and growing seasons are short, the Pend Oreille Valley has an advantage of being closely located to the Spokane metropolitan market area.

Blue Mountains

The Blue Mountains are an uplifted and eroded plateau extending into the southeastern corner of Washington. The strata are mainly ancient crystalline rocks which contain some minerals. The highest point of the mountains in the Washington section is Diamond Peak (6,401 feet), on the divide between the Grande Ronde, Tucannon and Touchet Rivers. These rivers, and the Walla Walla River, have cut valleys into the plateau. Extensive pine forest and grassland areas are in the highlands within Umatilla National Forest, where rainfall is 30 to 40 inches. The Snake River has cut a deep valley and gorge across the lower parts of the mountains. The area is well developed agriculturally around its northern foothills where wind-blown soils are deep and irrigation systems are used. The Walla Walla and Tucannon Valleys are rich grain, legume and livestock areas grown under irrigation and by dry farming. Grazing is an important use of the high lands by livestock ranchers in the upper valleys.

Topography of Kittitas County

Kittitas County contains mainly the upper, higher part of Cascade Mountains. Portions of the uplifted Yakima Folds--the Saddle Mountains, Manastash Ridge and Wenatchee Mountains which extend eastward to the Columbia River--make up large hilly areas.

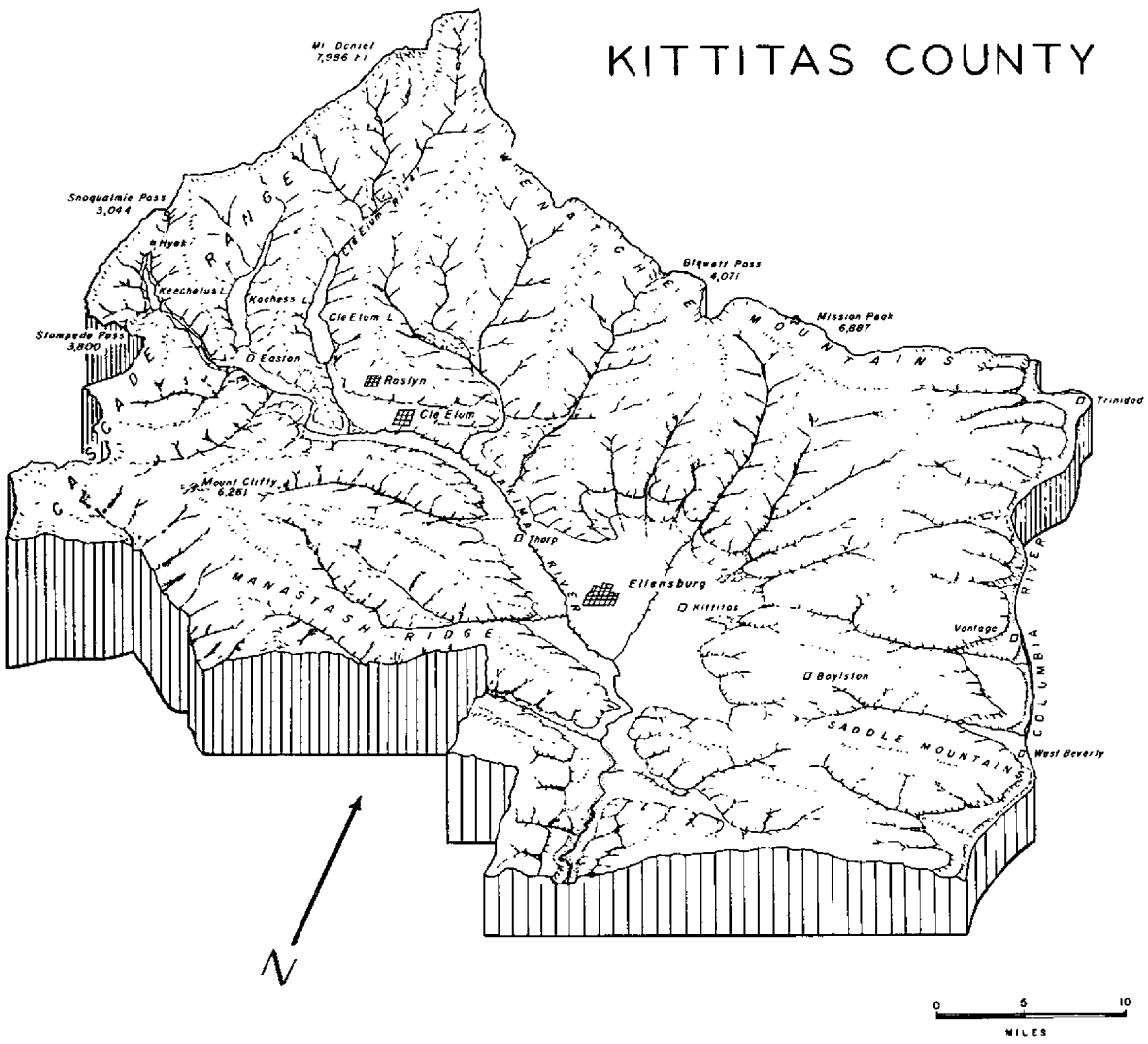
Important features of the terrain are the low valley plains and terraces formed over long periods of geological time by the Yakima River. A major plain, believed to be an ancient lake floor, surrounds Ellensburg. Although it is part of the Yakima River Valley floor system, this plain is termed the Kittitas Valley. It is separated from the area designated the "Upper Yakima Valley" by a gorge-like gap cut through the Manastash and Umtanum Ridges by the Yakima River. Physiographers believe that as this cutting progressed it drained the ancient lake basin now occupied by the Kittitas Valley. In more recent time glaciers and streams have deposited gravel, sand and clay in the lowlands making soils quite variable, but generally deep and easily tilled.

Major rock formations are the basaltic lavas bordering the Columbia River. Deep cuts made by the Yakima and Cle Elum Rivers have exposed slate and sandstone which have large seams of bituminous coal. At the crest of the Cascades an igneous rock which covers large areas is Keechelus andesite. The massive rock formations of the Cascades are glaciated and eroded into canyons and lake basins which are used as irrigation reservoirs and recreation areas. These include Kachess Reservoir, 239,000 acre feet; Keechelus Reservoir, 153,000 acre feet and Cle Elum, 435,700 acre feet--one of the most important watersheds in the state.

Elevations range from 7,926 feet on Mt. Daniel on the Cascade crest to about 475 feet on the banks of the Columbia River in the southeastern corner of the county area. Farmlands from Cle Elum down-river to the opening of the

TOPOGRAPHIC DIAGRAM

KITTITAS COUNTY



WASHINGTON CROP AND LIVESTOCK REPORTING SERVICE

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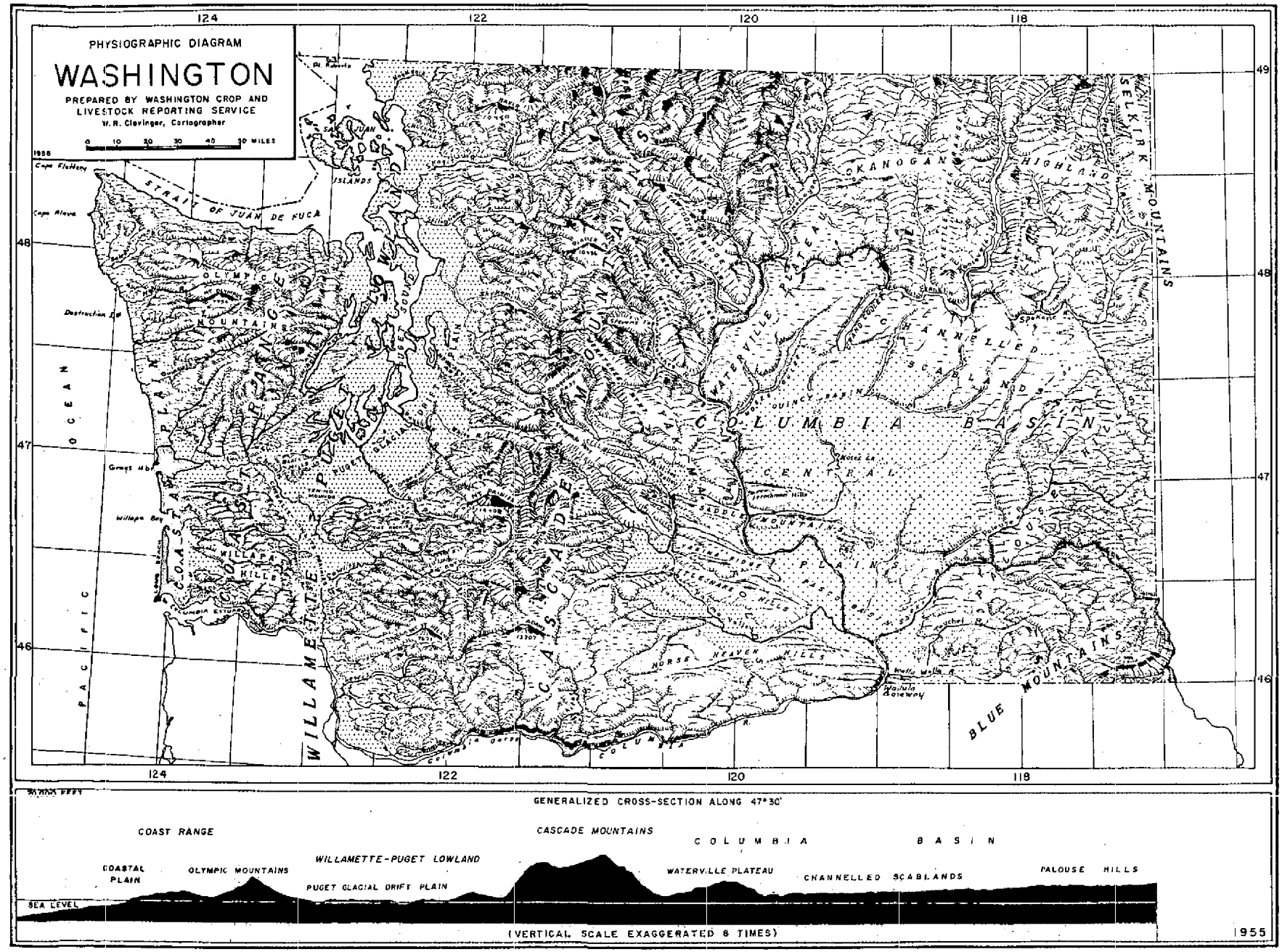
PHYSIOGRAPHIC DIAGRAM
WASHINGTON
PREPARED BY WASHINGTON CROP AND LIVESTOCK REPORTING SERVICE
W. R. Clevinger, Cartographer
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1955
124
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PACIFIC OCEAN
STRAIT OF JUAN DE FUCA
SAN JUAN ISLANDS
OLYMPIC MOUNTAINS
COASTAL PLAIN
WILLAPA HILLS
WILLAMETTE-PUGET LOWLAND
PUGET GLACIAL DRIFT PLAIN
CASCADE MOUNTAINS
OKANOGAN HIGHLAND
SELKIRK MOUNTAINS
WATERVILLE PLATEAU
CHANNELLED SCABLANDS
COLUMBIA BASIN
CENTRAL PLAINS
HORSE HEAVEN HILLS
BLUE MOUNTAINS
COLUMBIA
GENERALIZED CROSS-SECTION ALONG 47°30'
COAST RANGE
CASCADE MOUNTAINS
COLUMBIA BASIN
COASTAL PLAIN
OLYMPIC MOUNTAINS
WILLAMETTE-PUGET LOWLAND
PUGET GLACIAL DRIFT PLAIN
WATERVILLE PLATEAU
CHANNELLED SCABLANDS
PALOUSE HILLS
SEA LEVEL
(VERTICAL SCALE EXAGGERATED 8 TIMES)
1955

gap through Manastash Ridge vary from 1,900 to 1,500 feet. The Kittitas Valley is one of the highest sections growing crops in the state. With most of its crops growing at elevations between 1,500 and 1,800 feet it is an "upper-elevation" or "late farming area". Growing seasons are shorter and average temperatures are slightly cooler. Crops mature later in the season than at Yakima or Sunnyside, lower points farther down the Yakima River.

Low passes over the Cascades, Wenatchee Range and Saddle Mountains reduce the barrier effect of the highlands which surround the Kittitas basin area. Snoqualmie Pass to Seattle is 3,010 feet, Stampede Pass by rail to Tacoma is 3,800 feet, Blewett and Colockum Passes and Badger Gap leading eastward and northward to Spokane and Wenatchee are 4,071, 5,373 and 2,381 feet, respectively.

Land Classification and Soils:

Only about one-fifth of the Kittitas County area has soils capable of being irrigated and used for crops and cultivated pastures. About 80 percent is mapped by soil scientists as land containing hilly and mountainous terrain suited for summer grazing, forest growth and other non-agricultural uses. Where irrigation water is available, Class I, II, III and IV land ranging from excellent to fair quality is localized in the benchlands of the upper Yakima River and the flat plains surrounding the cities of Ellensburg and Kittitas, called the Kittitas Valley. Class I and II land amounts to about 70,000 acres. Important districts with good soils are alluvial or river-deposited terraces and lower stream course fans. 1/ The Manastash Creek plains about Ellensburg have good, deep soils named Manastash loams, Naches fine, sandy and clay loams and Wenas loams. Southeast of Ellensburg along Badger Creek in a district named the Badger Pocket there are wind-deposited soils of silt and fine sand. These are the Ahtanum, Nanum, Esquatzel, Kittitas and Renslow loams.

Class III and IV land consists of higher areas which cannot be irrigated completely and some low, gravelly sections along the Yakima River. Wind-deposited soils (Renslow loam, Selah loam, Simcoe clay and Taneum silty clay loam) are important soils of the higher terraces. Stream bottomlands and recently-deposited alluvial soils along the Yakima River, Swauk Creek and Teanaway River include the Swauk, Onyx, Cle Elum, Roslyn and Yakima loams. The Yakima and Onyx loams also are found on low terraces along the Columbia River on the eastern margin of the county. Most productive of the above soils for field crops are Esquatzel fine sandy loam, Manastash fine sandy loam, Onyx loam, Cle Elum loam, Naches loam, Reeser and Renslow loams and Taneum clay loams.

Soils of the mountainous, forested regions are not mapped and classified in detail. The mountain zone generally includes V, VI, VII and VIII classes of land which are suited only for grazing and forest growth because of rough topography and thin soils.

There are several problems in the improvement and farming of Kittitas County soils. Erosion from irrigation and infrequent but heavy showers affects

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1/ U.S.D.A. Soil Conservation Service and Washington Agricultural Experiment Stations cooperating. Soil Survey, Kittitas County. Pullman, Washington, January 1945.

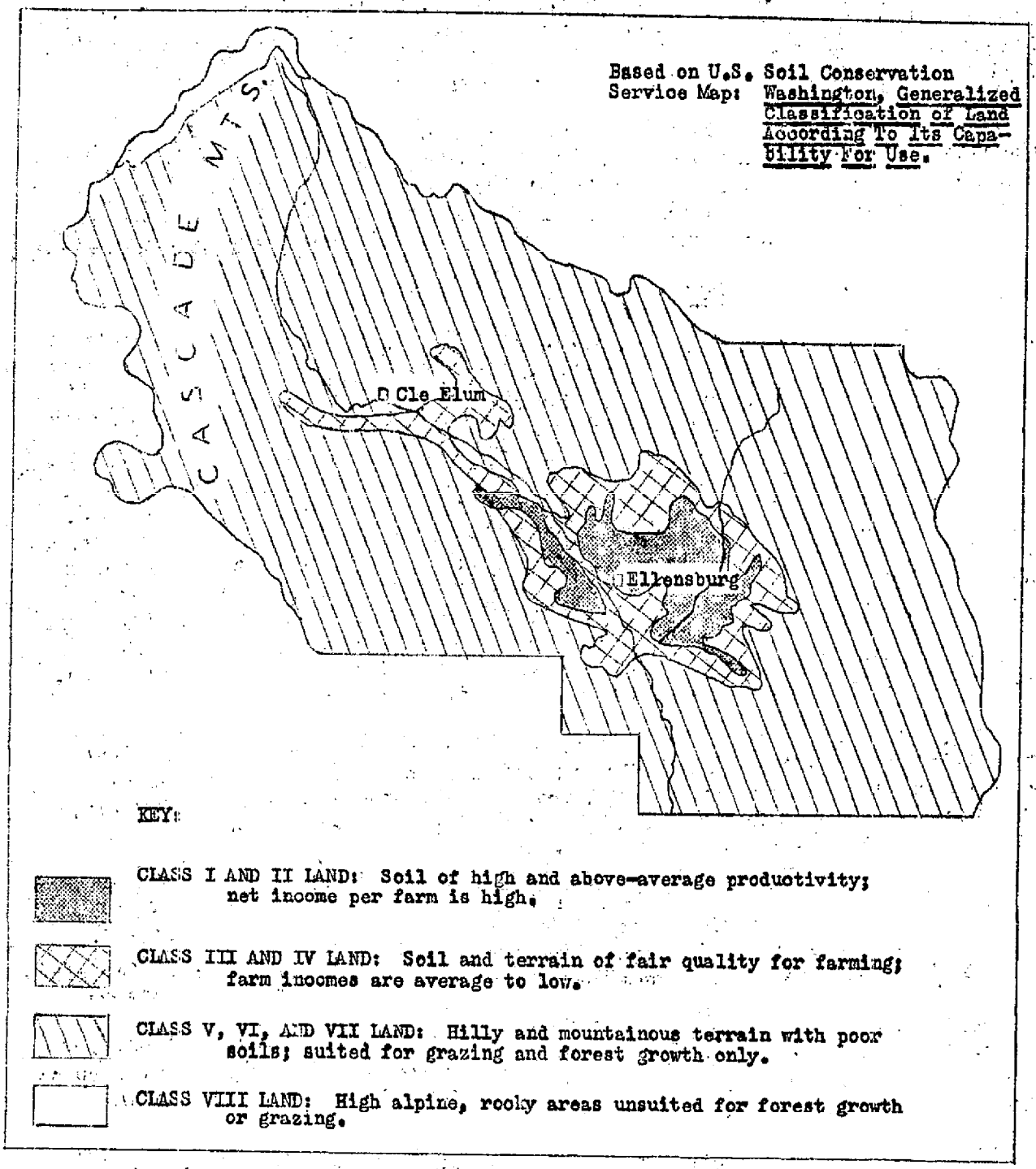

Figure 5. General Quality of Land in Kittitas County

some of the fine, sandy loams of the upper terraces. Wind blowing of plowed soils is another problem. Lower areas along the Yakima River are subject to seepage of irrigation water and flooding during the snow melt of early summer. Some low, flat areas have poor drainage and alkaline salts accumulate in these pockets. Soil fertility is high in soluble minerals developed under dry conditions, but long farming and hay cropping have caused deficiencies in soil nitrogen.

Climate

Kittitas County has a continental, mountain type of climate which is hot and dry in the summer, cool and moist in the winter. Because it is located mainly on the eastern slope of the Cascade Range, the climate is varied and greatly influenced by the mountains which act as a barrier to the moist, westerly winds. The rise of air over this range, and its drying, downward flow into the valley lowlands surrounding Ellensburg, creates temperature and moisture conditions of profound influence on farming. Dryness caused by the descending air and the summer sun caused early cattlemen and pioneers to look upon the land as a desert. The effects of land contour on atmospheric circulation make the area part of a great arid belt found along the eastern foot of the Cascades. This is one of the driest regions of the Pacific Northwest--a zone where precipitation varies from ten to below six inches per year. Early settlers had to use irrigation to grow crops.

Moisture conditions change considerably within a few miles from east to west with changes in altitude on the eastern Cascade slope. Rainfall and snowfall doubles in amount in the 25 miles from Ellensburg up the valley to Cle Elum. Lake Keechelus, a mountain weather station (2,475 feet) near the Cascade divide, is the wettest and coolest station in the county. Ellensburg in the lowlands (1,627 feet) is the driest and warmest. Other points eastward are even warmer and drier.

Table 6.- Precipitation, Kittitas County

Station and Elevation in Feet	Average Monthly Precipitation (in inches)												Annual Total (inches)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Cle Elum (1,900)	3.7	2.5	2.3	1.1	1.0	0.9	0.4	0.8	0.9	1.8	3.6	4.2	23.2
Ellensburg (1,627)	1.2	0.8	0.6	0.4	0.5	0.7	0.1	0.2	0.5	0.7	1.3	1.5	8.5
Lake Cle Elum (2,255)	5.9	3.9	3.5	1.5	1.4	0.9	0.4	0.5	1.4	3.2	5.6	6.4	34.6
Lake Kachess (2,270)	8.4	5.7	5.4	4.1	2.1	1.3	1.0	1.4	2.0	4.5	7.3	9.3	52.5
Lake Keechelus (2,475)	10.2	7.0	7.0	3.6	2.7	1.8	0.7	1.0	2.6	6.0	9.0	11.6	63.2

Source: U.S. Weather Bureau, Climatological Data, Washington, Annual Summary 1954.

Table 7.- Temperatures For Selected Stations, By Months
Kittitas County
(Source: United States Weather Bureau)

Station and Elevation in Feet	Average Temperatures (in degrees Fahrenheit)												Annual Average
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Cle Elum (1,900)	26.8	33.7	38.7	45.5	54.6	58.3	65.3	64.1	58.7	47.6	45	29.0	47.5
Ellensburg (1,627)	26.1	34.3	41.1	48.2	55.6	62.4	69.5	68.2	59.8	49.0	47.3	30.4	47.9
Lake Kachess (2,270)	25.7	31.6	36.2	43.0	49.6	56.6	63.7	63.2	55.6	46.2	43.6	29.0	44.5
Lake Keechelus (2,475)	26.1	32.8	34.3	40.3	47.2	54.4	61.3	61.4	54.2	45.8	49.1	29.2	43.2

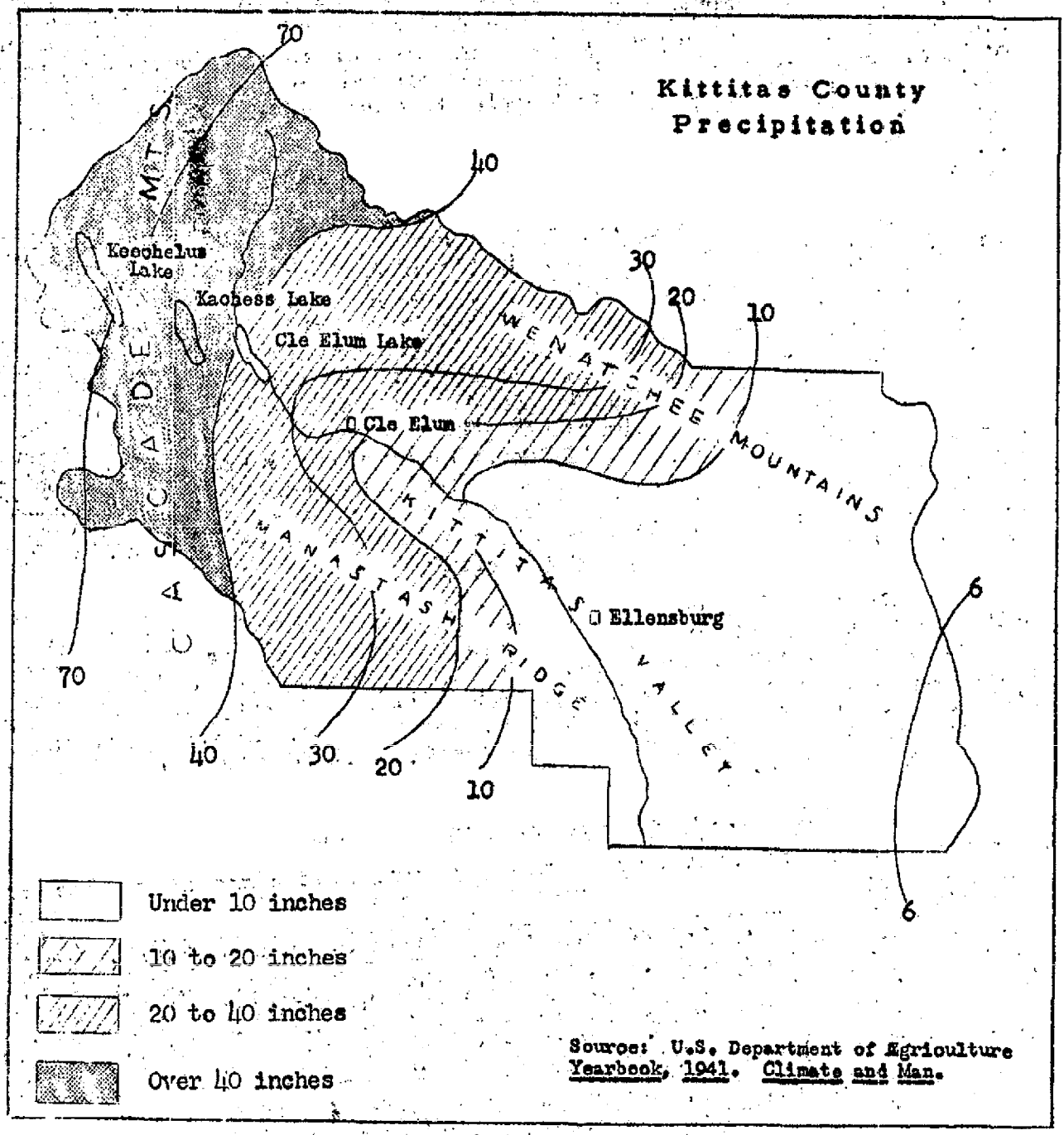

Figure 6. Distribution of Precipitation: Kittitas County

Table 8.- Temperature Extremes, Dates of Killing Frost
Kittitas County

Station	Temperature Extremes Recorded (degrees Fahrenheit)		Killing Frost Average Dates	
	Coldest	Hottest	Last in Spring	First in Fall
Cle Elum	-27	105	May 31	September 15
Ellensburg	-31	110	May 10	September 29
Lake Kachess	-17	102	May 16	October 2
Lake Keechelus	-20	102	May 22	September 29

Source: U.S. Dept. of Agric., Climate and Man, 1941 Yearbook of Agriculture.

Average daily temperatures in mid-winter (December-January) are generally below freezing over all sections of the county, averaging about 30 to 26 degrees at Ellensburg and 29 to 26 at Cle Elum. Winter extremes of 31 degrees below zero (December 12, 1919) have been recorded at Ellensburg. Freeze data indicate that killing frosts average May 10 in the spring and September 29 in the fall at Ellensburg. The Kittitas Valley below 1,800 feet elevation has an average growing season of about 142 days. However, because of uneven terrain there are low frost pockets. Cold air from the mountains drains into these pockets on calm, clear nights of spring and early fall. Farmers in the Ellensburg area plant their crops later in the spring and harvest later in fall than do those in the Yakima vicinity. The harvest peak in sweet corn and potatoes is about two weeks later.

Summer temperatures and amounts of sunshine are high. Extreme heat of 110 degrees was recorded at Ellensburg, July 26, 1948. Average summer daily temperatures during June, July and August range from 62 to 68 degrees. There is a considerable range of temperature during the 24 hour day. Midday temperatures may reach 85 to 90 degrees cooling off to 65 to 50 midnight. Because of the dry, descending winds, air moisture content or relative humidity is low, allowing for body comfort. Occasionally, low humidity with high temperatures accompanied by winds, will damage irrigated crops and create extreme fire hazards in the Wenatchee National Forest.

"Chinook" winds, which are warm air flowing down the eastern slope of the Cascades, are a climatic feature which benefits orchards and other crops in early spring. Mild Pacific Ocean air of about 40 degrees reaches the Cascade crest and is cooled to a temperature of 25 to 30 degrees at the 7,000 to 8,000 foot elevation. As the air descends the eastern slope into the Kittitas Valley, it is warmed by the physical process of compression. A unit of air, say a cubic foot, will be warmed about 5 degrees for each thousand feet of descent. When this air reaches the valley lowlands at Cle Elum, Thorp, Ellensburg and Kittitas, it may have warmed to 45 to 50 degrees. The atmosphere accompanying the Chinook is clear and soil moisture is evaporated rapidly. If there is a snow cover, the "Chinook" will melt it rapidly. This warming effect of the westerly winds on the lee side of the Cascade Mountains helps agriculture in several other valleys such as the Okanogan, Methow, Wenatchee and lower Yakima.

Vegetation, Forests and Wildlife:

Because of wide variations of altitude, temperature and soil moisture, natural vegetation is diverse. The eastern dry section is of the steppe (sagebrush) and desert type. Sage, bunch-grass and treeless landscapes are characteristic of the uplands, while small willows and cottonwoods line the streams. Progressing westward up the eastern slopes of the Cascade Mountains, conditions change rapidly from a thin to dense coniferous forest of pines, larches and firs. Extensive alpine grasslands and fields of huckleberries grow near the summit of the range. The western half of the county is classified as forest land of the mixed-conifer type.

Surveys made by the U.S. Forest Service show Kittitas to be an important forest-resource county. 1/ About 46 percent of the county area, or 675,000 acres, is growing commercial forests; another 5 percent, or 75,000 acres, is noncommercial forest of small alpine trees, meadows and rocky areas. Through partial cutting and selective logging, about 190,000 acres of commercial timber have so far been used by the lumber industry. In 1955 there was an estimated reserve of live saw timber growing on 675,000 acres containing 11,526,000,000 board feet.

The commercial timber reserve is composed of eight main species. Douglas fir is the most important, totaling 5,067,000,000 board feet. True firs of four species (Pacific silver, noble, white and sub-alpine fir) combined amount to 2,605,000,000 feet. Ponderosa pine is estimated at 825,000,000 feet. Other species of value are western hemlock and western larch with a combined volume of 3,029,000,000 feet.

Ownership of forest land is about equally divided between private and public holdings. Private owners, including ranchers, farmers, lumber companies, railroads and others have title to about 314,000 acres or 47 percent of commercial forest land. The United States government owns 250,000 acres in Wenatchee National Forest and 51,000 acres in Snoqualmie National Forest, or 44 percent. In addition to the Forest Service, which manages the two national forests, a small area of 6,750 acres is administered by the Federal Bureaus of Land Management and Reclamation. The State of Washington controls 53,000 acres or about 8 percent. These are mainly school lands granted to the State by the Federal Government to support public schools and colleges.

The mountainous forested land of Kittitas County has four important multiple uses, each of which are of benefit to the agricultural economy. These include lumbering and forest-protection employment and management for grazing, irrigation watersheds, wildlife and recreation.

The irrigation systems and districts of Kittitas, as well as the lower Yakima Valley, depend on the snowfields and streams in Wenatchee and Snoqualmie National Forests. The Cle Elum and Teanaway Rivers, branches of the Yakima

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1/ U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. "Forest Statistics for Kittitas County, Washington." (mimeographed) October, 1954.

River, are major watersheds in Wenatchee National Forest. Manastash Creek flows from Snoqualmie National Forest.

Commercial sawtimber has long provided off-the-farm work for upper valley settlers in the Cle Elum district. Saw logs were formerly driven down the Cle Elum, Teanaway and Yakima Rivers for sawmilling at Yakima. Trucks and railroads today deliver sawlogs to Easton, Cle Elum and Ellensburg. Lumbering has been an increasing field of part-time employment in the Yakima-Kittitas Counties area. In 1930 four mills produced 18,200,000 board feet, while in 1948 18 mills were producing 95,037,000 feet per year. In 1954, there were 22 farms reporting forest products sales of firewood, fence posts, sawlogs and pulpwood.

The grazing of sheep and some cattle is an important use of the national forests. The sheep and livestock industries for many years have depended on the summer grazing permit system. In 1955 grazing permits for about 12,000 sheep owned by five sheepmen of Kittitas and Yakima Counties were grazed in Wenatchee National Forest in the Natapoc Mountain, Chiwaukum Lake and Wildhorse districts. Grazing management by the Forest Service has to consider carefully the effects on forest growth, watershed protection, recreation and wildlife management.

Recreation and wildlife management have become more important types of forest land use. Thousands of campers, skiers, fishermen and hunters from the Seattle area, as well as Ellensburg and Yakima, use the mountain areas of Kittitas County surrounding Snoqualmie Pass, Easton and Cle Elum. The mountain area yields a valuable resource of game and fur each year. Elk and deer hunting attracts many sportsmen. In the 1951 season 518 elk and 768 deer were killed by hunters. 1/ The county ranked third in elk hunting. In addition, the lowland cultivated fields of the farmlands yielded 23,605 ring-necked pheasants, fourth in the state. During the 1951-52 season 32 licensed fur trappers in Kittitas County reported a wild fur catch of 995 muskrat, 105 mink and 87 marten from the streams, lakes and forests. 2/ While the wild game resources are valuable they conflict with farming in some areas. Big game animals migrate to lowland farming districts each winter damaging fruit trees by their browsing.

1/ Washington State Game Department, Game Bulletin, July 1952.

2/ Washington State Game Department, "Report of Trappers' Catch of Fur-Bearing Animals, 1951-52 season".